Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application.

1. (presently amended) A power generation system, comprising:

a DC bus;

a turbogenerator, including a motor/generator and a turbine coupled to a common shaft, ~~said turbogenerator~~ to generate AC power;

a first power converter coupled to the turbogenerator and the DC bus, ~~said first power converter~~ to convert ~~said~~ the AC power to DC power on ~~said~~ the DC bus;

a second power converter coupled to the DC bus and for coupling to a load, ~~said~~ the second power converter ~~to convert said~~ converting the DC power on ~~said~~ the DC bus to an output power for applying to the load;

~~a battery coupled to the DC bus;~~

a capacitor coupled to the DC bus to source power to and sink power from the DC bus, due to load changes, to stabilize a DC voltage on the DC bus; and

a ~~power~~ controller coupled to the turbogenerator and the first ~~and second~~ power converter[[s]], ~~said power~~ the controller ~~to regulate~~ regulating a speed of the turbine, independent of the DC voltage on the DC bus.

2. (presently amended) The power generation system of claim 1, wherein ~~the DC bus and the first and second power converters are contained within the power controller~~ the controller is a rotor speed controller.

3. (presently amended) The power generation system of claim 1, further comprising:

a third power converter coupled between the DC bus and the capacitor, ~~said power controller~~ to controllably couple the capacitor to the DC bus ~~via the third power converter~~.

4. (presently amended) The power generation system of claim ~~3 wherein the~~ 1, further comprising:

a battery ~~is controllably~~ coupled to the DC bus ~~via said third power converter~~.

5. (presently amended) The power generation system of claim [[3]] 4, further comprising:

a fourth power converter coupled between the DC bus and the battery~~, said power controller~~ to controllably couple the battery to the DC bus ~~via the fourth power converter~~.

6. (presently amended) The power generation system of claim 1, wherein the capacitor is at least one of an electrochemical capacitor and a hybrid capacitor.

7. (presently amended) The power generation system of claim 1, wherein ~~said~~ the second power converter comprises a DC/ DC power converter to convert the DC voltage on the DC bus to a regulated DC output voltage for applying to the load.

8. (presently amended) The power generation system of claim 1, wherein ~~said~~ the second power converter comprises a DC/ AC power converter to convert the DC power on the DC bus to an AC output power having a fixed frequency for applying to the load.

9. (presently amended) The power generation system of claim 1, wherein when an increase in power demanded by [in] the load is detected, ~~the power controller controllably couples~~ the capacitor is controllably coupled to the DC bus to source power to the DC bus to meet the increase in power demanded by [in] the load.

10. (presently amended) The power generation system of claim 9, wherein when the increase in power demanded by [in] the load is detected, the ~~power~~ controller increases the speed of the turbine to increase the DC power supplied to [[on]]the DC bus~~, and wherein when the DC power on the DC bus meets the increase in power in the load, said power controller recharges the capacitor to a predetermined level~~.

11. (presently amended) The power generation system of claim 10, wherein when a decrease in power demanded by [in] the load is detected, the ~~power~~ controller decreases the speed of the turbine to decrease the DC power supplied to [[on]] the DC bus.

12. (presently amended) The power generation system of claim 11, wherein ~~the power controller controllably couples~~ the capacitor is controllably coupled to the DC bus to sink excess current on the DC bus.

13. (presently amended) The power generation system of claim [[3]] 1, wherein ~~said~~ the first and second power converters are bi-directional power converters.~~, said power controller, in a startup mode, to (i) disable the second power converter to isolate the DC bus from the load, (ii) configure the third power converter to couple the capacitor to the DC bus and provide a startup DC power on the DC bus, and (iii) configure the first power converter to convert the startup DC power on the DC bus to a startup AC power to start the motor/generator.~~

14. (presently amended) The power generation system of claim 13, further comprising:

a battery controllably coupled to the capacitor to charge the capacitor ~~to allow said capacitor to start the motor/generator during a startup mode~~.

15. (presently amended) The power generation system of claim 1, wherein the turbogenerator further comprises:

~~a generator, coupled to the common shaft, to generate the AC power;~~

a compressor, coupled to the common shaft, [[to]] that provides a supply of compressed air;

a combustor ~~coupled to receive~~ fluidly coupled to the compressor that combusts the supply of compressed air and the fuel~~, said combustor to combust the fuel and to provide~~ and produces exhaust gas;

~~the turbine coupled the common shaft and coupled to receive the exhaust gas, said exhaust gas to flow through the turbine to control a rotational speed of the common shaft;~~ and

a recuperator fluidly coupled to the combustor that includes ~~including~~ a high pressure side, coupled between the compressor and the combustor, and a low pressure side, coupled to receive the exhaust gas ~~from~~ after the exhaust gas has passed through the turbine.

16. (presently amended) A power generation system, comprising:

a fuel source to provide fuel;

a turbogenerator, coupled to the fuel source, to generate AC power;

a power controller, electrically coupled to the turbogenerator, including first and second power converters electrically coupled together by a DC bus, ~~said~~ wherein the first power converter ~~to convert said~~ converts the AC power generated by the turbogenerator to DC power ~~on a DC bus~~, and ~~said~~ the second power converter ~~to convert said~~ converts the DC power ~~on said DC bus~~ to an output power for coupling to a load, ~~said~~ the power controller ~~to regulate~~ regulating the fuel to the turbogenerator, independent of a DC voltage on the DC bus;

~~a capacitor controllably coupled to the DC bus;~~ and

a battery controllably coupled to the DC bus[[;]].

17. (presently amended) The power generation system of claim 16, further comprising:

a capacitor controllably coupled to the DC bus.

~~wherein the capacitor to source power to and sink power from the DC bus, due to load changes, to stabilize the DC voltage on the DC bus.~~

18. (presently amended) The power generation system of claim [[~~16~~]] 17, wherein the capacitor and the battery [[~~to~~]] stabilize the DC voltage on the DC bus during transients.

19. (presently amended) The power generation system of claim 16, further comprising:

a third power converter coupled between the DC bus and the battery ~~capacitor, said power controller~~ to controllably couple the battery ~~capacitor~~ to the DC bus ~~via the third power converter~~.

20. (presently amended) The power generation system of claim 17 [[~~19~~]], wherein the battery is coupled across the capacitor by a switch~~, said one or both of the capacitor and the battery being controllably coupled to the DC bus via one or both of the third power converter and the switch~~.

21. (presently amended) The power generation system of claim 19, wherein the third power converter is ~~contained within the~~ a bi-directional power controller.

22. (presently amended) The power generation system of claim 19, further comprising:

a fourth power converter coupled between the DC bus and the capacitor ~~battery, said power controller~~ to controllably couple the capacitor ~~battery~~ to the DC bus ~~via the fourth power converter~~.

23. (presently amended) The power generation system of claim [[~~16~~]] 17, wherein the capacitor is at least one of an electrochemical capacitor and a hybrid capacitor.

24. (presently amended) The power generation system of claim 16, wherein ~~said~~ the second power converter comprises a DC/ DC power converter to convert the DC voltage on the DC bus to a regulated DC output voltage for coupling to the load.

25. (presently amended) The power generation system of claim 16, wherein ~~said~~ the second power converter comprises a DC/AC power converter to convert the DC power on the DC bus to an AC output power having a fixed frequency for coupling to the load.

26. (presently amended) The power generation system of claim [[~~16~~]] 17, wherein when an increase in the load is detected, the power controller controllably couples the capacitor to the DC bus to source power to the DC bus to meet the increase in the load.

27. (presently amended) The power generation system of claim 26, wherein when the increase in the load is detected, the power controller increases the fuel to the turbogenerator to increase the DC power supplied to [[on]] the DC bus~~, and wherein when the DC power on~~

~~the DC bus meets the increase in the load, said power controller recharges the capacitor to a predetermined level and then decouples the capacitor from the DC bus.~~

28. (presently amended) The power generation system of claim 27, wherein when a decrease in the load is detected, the power controller decreases the fuel to the turbogenerator to decrease the DC power supplied to [[~~on~~]] the DC bus~~, and controllably couples the capacitor to the DC bus to absorb any excess current on the DC bus~~.

29. (presently amended) The power generation system of claim [[~~19~~]] 16, wherein ~~said~~ the first and second power converters are bi-directional power converters~~, said power controller, in a startup mode, to (i) disable the second power converter to isolate the DC bus from the load, (ii) configure the third power converter to couple the capacitor to the DC bus and provide a startup DC power on the DC bus, and (iii) configure the first power converter to convert the startup DC power on the DC bus to a startup AC power to start the motor/generator~~.

30. (presently amended) The power generation system of claim ~~of claim~~ 16, wherein the turbogenerator comprises:

a shaft;

a generator, coupled to the shaft, to generate the AC power;

a compressor, coupled to the shaft, to provide a supply of compressed air;

a combustor, coupled to receive the supply of compressed air and the fuel, ~~said combustor~~ to combust the fuel and to provide exhaust gas;

a turbine coupled to the shaft and coupled to receive the exhaust gas, ~~said exhaust gas to flow through the turbine to control a rotational speed of the shaft~~; and

a recuperator including a high pressure side, coupled between the compressor and the combustor, and a low pressure side coupled, to receive the exhaust gas from the turbine.

31. (presently amended) The power generation system of claim 30, further comprising:

a temperature sensor, coupled to the power controller and the turbine to sense a temperature, ~~said~~ the power controller ~~to vary~~ varying the supply of fuel to the combustor to

control the temperature, ~~said~~ the control of the temperature being independent of the DC voltage on the DC bus.

32. (presently amended) A power generation system, comprising:

a turbogenerator including a motor/generator and a turbine coupled to a common shaft, ~~said~~ the turbogenerator to generate AC power;

first power converter means, coupled to the turbogenerator and a DC bus, for converting ~~said~~ the AC power to DC power ~~on a DC bus~~;

second power converter means, coupled to the DC bus, for converting ~~said~~ the DC power ~~on said DC bus~~ to an output power for coupling to a load;

power source means controllably coupled to the DC bus;

capacitor means controllably coupled to the DC bus;

third power converter means, coupled between the capacitor means and the DC bus; and

~~power~~ controller means, coupled to the turbogenerator and the first, second, and third power converter means, for controllably coupling the power source means and the capacitor means to the DC bus to stabilize a DC voltage on the DC bus during transients, and for regulating a speed of the ~~turbine~~ turbogenerator, independent of the DC voltage on the DC bus.

33. (presently amended) The power generation system of claim 32, wherein the power source means is a battery ~~is controllably coupled to the DC bus via said third power converter means and alternatively via a fourth power converter means~~.

34. (presently amended) The power generation system of claim 32, wherein when an increase ~~in power~~ in the load is detected, the ~~power~~ controller means controllably couples the capacitor means to the DC bus to source power to the DC bus to meet the increase ~~in power~~ in the load.

35. (presently amended) The power generation system of claim 34, wherein when the increase ~~in power~~ in the load is detected, the ~~power~~ controller means increases the speed of

the ~~turbine~~ turbogenerator to increase the DC power supplied to [[on]] the DC bus~~, and wherein when the DC power on the DC bus meets the increase in power in the load, said power controller means recharges one or both of the capacitor means and the power source means~~.

36. (presently amended) The power generation system of claim 35, wherein when a decrease ~~in power~~ in the load is detected, the ~~power~~ controller means decreases the speed of the ~~turbine~~ turbogenerator to decrease the DC power supplied to [[on]] the DC bus.

37. (presently amended) The power generation system of claim 32, wherein ~~said~~ the ~~power~~ controller means, in a startup mode, ~~for (i) disabling~~ disables the second power converter means to isolate the DC bus from the load, ~~(ii) configuring~~ configures the third power converter means to couple the capacitor means to the DC bus and provide a startup DC power [[on]] to the DC bus, and ~~(iii) configuring~~ configures the first power converter means to convert the startup DC power ~~on the DC bus~~ to a startup AC power to start the motor/generator.

38. (presently amended) The power generation system of claim 37, wherein the ~~power controller means for controllably coupling the power source means across the capacitor means to charge the capacitor to allow said capacitor to start the motor/generator during the startup mode~~ the first, second, and third power converter means are bi-directional power converters.

39. (presently amended) The power generation system of claim 32, wherein the turbogenerator further comprises:

~~a generator, coupled to the common shaft, to generate the AC power;~~

a compressor, coupled to the common shaft, to provide a supply of compressed air;

a combustor ~~coupled~~ to receive the supply of compressed air and ~~the~~ fuel~~, said combustor to combust the fuel and to provide~~ and combust compressed air and fuel to produce exhaust gas;

~~the turbine coupled the common shaft and coupled to receive the exhaust gas, said exhaust gas to flow through the turbine to control a rotational speed of the common shaft;~~ and

a recuperator including a high pressure side, coupled between the compressor and the combustor, and a low pressure side, coupled to receive the exhaust gas after the exhaust gas flows through ~~from~~ the turbine.